National Institute of Environmental Health Sciences

Epidemiology and Infection: The relationship of meteorological conditions to the epidemic activity of respiratory syncytial virus

Author(s): Yusuf S, Piedimonte G, Auais A, Demmler G, Krishnan S, Van Caeseele P, Singleton R, Broor S, Parveen S, Avendano L, Parra J, Chavez-Bueno S, De Sierra TM, Simoes EAF, Shaha S, Welliver Sr R

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Abstract:

Our aim was to obtain knowledge of how meteorological conditions affect community epidemics of respiratory syncytial virus (RSV) infection. To this end we recorded year-round RSV activity in nine cities that differ markedly in geographic location and climate. We correlated local weather conditions with weekly or monthly RSV cases. We reviewed similar reports from other areas varying in climate. Weekly RSV activity was related to temperature in a bimodal fashion, with peaks of activity at temperatures above 24-30 degrees C and at 2-6 degrees C. RSV activity was also greatest at 45-65% relative humidity. RSV activity was inversely related to UVB radiance at three sites where this could be tested. At sites with persistently warm temperatures and high humidity, RSV activity was continuous throughout the year, peaking in summer and early autumn. In temperate climates, RSV activity was maximal during winter, correlating with lower temperatures. In areas where temperatures remained colder throughout the year, RSV activity again became nearly continuous. Community activity of RSV is substantial when both ambient temperatures and absolute humidity are very high, perhaps reflecting greater stability of RSV in aerosols. Transmission of RSV in cooler climates is inversely related to temperature possibly as a result of increased stability of the virus in secretions in the colder environment. UVB radiation may inactivate virus in the environment, or influence susceptibility to RSV by altering host resistance.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2870672

Resource Description

Exposure : ☑

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Precipitation, Solar Radiation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States, United States

Non-United States: Asia, Central/South America, Non-U.S. North America

Asian Region/Country: India

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Airborne Disease

Airborne Disease: Respiratory Synctial Virus (RSV)

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified